Appendices

Appendix A. Classification Systems

Table A.1 Site Classes
(from the 1997 *NEHRP Provisions*)

Site Class	Site Class Description	Shear Wave Velocity (m/sec)	
		Minimum	Maximum
A	HARD ROCK Eastern United States sites only	1500	
B	ROCK	760	1500
C	VERY DENSE SOIL AND SOFT ROCK Untrained shear strength $u_s \geq 2000$ psf ($u_s \geq 100$ kPa) or $N \geq 50$ blows/ft	360	760
D	STIFF SOILS Stiff soil with undrained shear strength 1000 psf $\leq u_s \leq 2000$ psf (50 kPa $\leq u_s \leq 100$ kPa) or $15 \leq N \leq 50$ blows/ft	180	360
E	SOFT SOILS Profile with more than 10 ft (3 m) of soft clay defined as soil with plasticity index PI > 20, moisture content w > 40% and undrained shear strength $u_s < 1000$ psf (50 kPa) (N < 15 blows/ft)		180
F	SOILS REQUIRING SITE SPECIFIC EVALUATIONS 1. Soils vulnerable to potential failure or collapse under seismic loading: e.g. liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils. 2. Peats and/or highly organic clays (10 ft (3 m) or thicker layer) 3. Very high plasticity clays: (25 ft (8 m) or thicker layer with plasticity index >75) 4. Very thick soft/medium stiff clays: (120 ft (36 m) or thicker layer)		

Table A.2 Structural Building Classifications (Model Building Types)

No.	Label	Description	Height			
			Range		Typical	
			Name	Stories	Stories	Feet
1	W1	Wood, Light Frame (≤ 5,000 sq. ft.)		1 - 2	1	14
2	W2	Wood, Greater than 5,000 sq. ft.		All	2	24
3	S1L	Steel Moment Frame	Low-Rise	1 - 3	2	24
4	S1M		Mid-Rise	4 - 7	5	60
5	S1H		High-Rise	8+	13	156
6	S2L	Steel Braced Frame	Low-Rise	1 - 3	2	24
7	S2M		Mid-Rise	4 - 7	5	60
8	S2H		High-Rise	8+	13	156
9	S3	Steel Light Frame		All	1	15
10	S4L	Steel Frame with Cast-in-Place Concrete Shear Walls	Low-Rise	1 - 3	2	24
11	S4M		Mid-Rise	4 - 7	5	60
12	S4H		High-Rise	8+	13	156
13	S5L	Steel Frame with Unreinforced Masonry Infill Walls	Low-Rise	1 - 3	2	24
14	S5M		Mid-Rise	4 - 7	5	60
15	S5H		High-Rise	8+	13	156
16	C1L	Concrete Moment Frame	Low-Rise	1 - 3	2	20
17	C1M		Mid-Rise	4 - 7	5	50
18	C1H		High-Rise	8+	12	120
19	C2L	Concrete Shear Walls	Low-Rise	1 - 3	2	20
20	C2M		Mid-Rise	4 - 7	5	50
21	C2H		High-Rise	8+	12	120
22	C3L	Concrete Frame with Unreinforced Masonry Infill Walls	Low-Rise	1 - 3	2	20
23	C3M		Mid-Rise	4 - 7	5	50
24	C3H		High-Rise	8+	12	120
25	PC1	Precast Concrete Tilt-Up Walls		All	1	15
26	PC2L	Precast Concrete Frames with Concrete Shear Walls	Low-Rise	1 - 3	2	20
27	PC2M		Mid-Rise	4 - 7	5	50
28	PC2H		High-Rise	8+	12	120
29	RM1L	Reinforced Masonry Bearing Wall s with Wood or Metal Deck Diaphragms	Low-Rise	1-3	2	20
30	RM2M		Mid-Rise	4+	5	50
31	RM2L	Reinforced Masonry Bearing Wall s with Precast Concrete Diaphragms	Low-Rise	1 - 3	2	20
32	RM2M		Mid-Rise	4 - 7	5	50
33	RM2H		High-Rise	8+	12	120
34	URML	Unreinforced Masonry Bearing Walls	Low-Rise	1 - 2	1	15
35	URMM		Mid-Rise	3+	3	35
36	MH	Mobile Homes		All	1	10

Table A.3 Building Occupancy Classes

No.	Label	Occupancy Class	Description
		Residential	
1	RES1	Single Family Dwelling	House
2	RES2	Mobile Home	Mobile Home
3	RES3	Multi Family Dwelling	Apartment/Condominium
4	RES4	Temporary Lodging	Hotel/Motel
5	RES5	Institutional Dormitory	Group Housing (military, college), Jails
6	RES6	Nursing Home	
		Commercial	
7	COM1	Retail Trade	Store
8	COM2	Wholesale Trade	Warehouse
9	COM3	Personal and Repair Services	Service Station/Shop
10	COM4	Financial/Professional/Technical Services	Offices
11	COM5	Banks	
12	COM6	Hospital	
13	COM7	Medical Office/Clinic	
14	COM8	Entertainment & Recreation	Restaurants/Bars
15	COM9	Theaters	Theaters
16	COM10	Parking	Garages
		Industrial	
17	IND1	Heavy	Factory
18	IND2	Light	Factory
19	IND3	Food/Drugs/Chemicals	Factory
20	IND4	Metals/Minerals Processing	Factory
21	IND5	High Technology	Factory
22	IND6	Construction	Office
		Agriculture	
23	AGR1	Agriculture	
		Religion/Non-Profit	
24	REL1	Church	
		Government	
25	GOV1	General Services	Office
26	GOV2	Emergency Response	Police/Fire Station
		Education	
27	EDU1	Schools	
28	EDU2	Colleges/Universities	does not include group housing

Table A.4 Essential Facilities Classification

No.	Label	Occupancy Class	Description
		Medical Care Facilities	
1	EFHS	Small Hospital	Hospital with less than 50 Beds
2	EFHM	Medium Hospital	Hospital with beds between 50 & 150
3	EFHL	Large Hospital	Hospital with greater than 150 Beds
4	EFMC	Medical Clinics	Clinics, Labs, Blood Banks
		Emergency Response	
5	EFFS	Fire Station	
6	EFPS	Police Station	
7	EFEO	Emergency Operation Centers	
		Schools	
8	EFS1	Grade Schools	Primary/ High Schools
9	EFS2	Colleges/Universities	

Table A.5 High Potential Loss Facilities Classification

No.	Class	Description
		Dams
1	HPDE	Earth
2	HPDR	Rockfill
3	HPDG	Concrete Gravity
4	HPDB	Concrete Buttress
5	HPDA	Concrete Arch
6	HPDM	Concrete Multi-Arch
7	HPDC	Concrete Arch-Gravity
8	HPDM	Masonry Gravity
9	HPDD	Masonry Arch
10	HPDS	Stone
11	HPDT	TimberCrib
12	HPDZ	Miscellaneous
		Nuclear Power Facilities
12	HPNP	Nuclear Power Facilities
		Military Installations
13	HPMI	Military Installations

Table A.6 Highway System Classification

Label	Description
	Highway Roads
HRD1	Major Roads
HRD2	Urban Roads
	Highway Bridges
HWB1	Major Bridge - Length > 150m (Conventional Design)
HWB2	Major Bridge - Length > 150m (Seismic Design)
HWB3	Single Span – (Not HWB1 or HWB2) (Conventional Design)
HWB4	Single Span – (Not HWB1 or HWB2) (Seismic Design)
HWB5	Concrete, Multi-Column Bent, Simple Support (Conventional Design), Non-California (Non-CA)
HWB6	Concrete, Multi-Column Bent, Simple Support (Conventional Design), California (CA)
HWB7	Concrete, Multi-Column Bent, Simple Support (Seismic Design)
HWB8	Continuous Concrete, Single Column, Box Girder (Conventional Design)
HWB9	Continuous Concrete, Single Column, Box Girder (Seismic Design)
HWB10	Continuous Concrete, (Not HWB8 or HWB9) (Conventional Design)
HWB11	Continuous Concrete, (Not HWB8 or HWB9) (Seismic Design)
HWB12	Steel, Multi-Column Bent, Simple Support (Conventional Design), Non-California (Non-CA)
HWB13	Steel, Multi-Column Bent, Simple Support (Conventional Design), California (CA)
HWB14	Steel, Multi-Column Bent, Simple Support (Seismic Design)
HWB15	Continuous Steel (Conventional Design)
HWB16	Continuous Steel (Seismic Design)
HWB17	PS Concrete Multi-Column Bent, Simple Support - (Conventional Design), Non-California
HWB18	PS Concrete, Multi-Column Bent, Simple Support (Conventional Design), California (CA)
HWB19	PS Concrete, Multi-Column Bent, Simple Support (Seismic Design)
HWB20	PS Concrete, Single Column, Box Girder (Conventional Design)
HWB21	PS Concrete, Single Column, Box Girder (Seismic Design)
HWB22	Continuous Concrete, (Not HWB20/HWB21) (Conventional Design)
HWB23	Continuous Concrete, (Not HWB20/HWB21) (Seismic Design)
HWB24	Same definition as HWB12 except that the bridge length is less than 20 meters
HWB25	Same definition as HWB13 except that the bridge length is less than 20 meters
HWB26	Same definition as HWB15 except that the bridge length is less than 20 meters and Non-CA
HWB27	Same definition as HWB15 except that the bridge length is less than 20 meters and in CA
HWB28	All other bridges that are not classified (including wooden bridges)
	Highway Tunnels
HTU1	Highway Bored/Drilled Tunnel
HTU2	Highway Cut and Cover Tunnel

Table A.7 Railway System Classification

No.	Label[1]	Description
		Railway Tracks
1	RTR1	Railway Tracks
		Railway Bridges
2	RBR1	Rail Bridge - Seismically Designed/Retrofitted
3	RBR2	Rail Bridge - Conventionally Designed
		Railway Tunnels
4	RTU1	Rail Bored/Drilled Tunnel
5	RTU2	Rail Cut and Cover Tunnel
		Railway Urban Station
6	RST1L	Rail Urban Station, RC Shear Walls
7	RST2L	Rail Urban Station, Braced Steel Frame
8	RST3L	Rail Urban Station, MR Steel Frame
9	RST4L	Rail Urban Station, Steel Frame & URM
10	RST5L	Rail Urban Station, Tilt-Up
11	RST6L	Rail Urban Station, Concrete Frame & URM
12	RST7L	Rail Urban Station, Wood
13	RST1M	Rail Urban Station, RC Shear Walls
14	RST2M	Rail Urban Station, Braced Steel Frame
15	RST3M	Rail Urban Station, MR Steel Frame
16	RST4M	Rail Urban Station, Steel Frame & URM
17	RST5M	Rail Urban Station, Tilt-Up
18	RST6M	Rail Urban Station, Concrete Frame & URM
19	RST7M	Rail Urban Station, Wood
20	RST1H	Rail Urban Station, RC Shear Walls
21	RST2H	Rail Urban Station, Braced Steel Frame
22	RST3H	Rail Urban Station, MR Steel Frame
23	RST4H	Rail Urban Station, Steel Frame & URM
24	RST5H	Rail Urban Station, Tilt-Up

[1] H = high, M = moderate, L = low seismic design level

Table A.7 Cont. Railway System Classification

No.	Label	Description
25	RST6H	Rail Urban Station, Concrete Frame & URM
26	RST7H	Rail Urban Station, Wood
		Railway Fuel Facility
27	RFF1	Rail Fuel Facility w/ Anchored Tanks, w/ Back-Up (BU) Power
28	RFF2	Rail Fuel Facility w/ Anchored Tanks, w/o BU Power
29	RFF3	Rail Fuel Facility w/ Unanchored Tanks, w/ BU Power
30	RFF4	Rail Fuel Facility w/ Unanchored Tanks, w/o BU Power
31	RFF5	Rail Fuel Facility w/ Buried Tanks
		Railway Dispatch Facility
32	RDF1	Rail Dispatch Facility w/ Anchored Sub-Component, w/ BU Power
33	RDF2	Rail Dispatch Facility w/ Anchored Sub-Comp., w/o BU Power
34	RDF3	Rail Dispatch Facility w/ Unanchored Sub-Comp., w/ BU Power
35	RDF4	Rail Dispatch Facility w/ Unanchored Sub-Comp., w/o BU Power
		Railway Maintenance Facility
36	RMF1L	Rail Maintenance Facility, RC Shear Walls
37	RMF2L	Rail Maintenance Facililty, Braced Steel Frame
38	RMF3L	Rail Maintenance Facility, MR Steel Frame
39	RMF4L	Rail Maintenance Facility, Steel Frame & URM
40	RMF5L	Rail Maintenance Facility, Tilt-Up
41	RMF6L	Rail Maintenance Facility, Concrete Frame & URM
42	RMF7L	Rail Maintenance Facility, Wood
43	RMF1M	Rail Maintenance Facility, RC Shear Walls
44	RMF2M	Rail Maintenance Facililty, Braced Steel Frame
45	RMF3M	Rail Maintenance Facility, MR Steel Frame
46	RMF4M	Rail Maintenance Facility, Steel Frame & URM
47	RMF5M	Rail Maintenance Facility, Tilt-Up
48	RMF6M	Rail Maintenance Facility, Concrete Frame & URM
49	RMF7M	Rail Maintenance Facility, Wood
50	RMF1H	Rail Maintenance Facility, RC Shear Walls
51	RMF2H	Rail Maintenance Facililty, Braced Steel Frame
52	RMF3H	Rail Maintenance Facility, MR Steel Frame
53	RMF4H	Rail Maintenance Facility, Steel Frame & URM
54	RMF5H	Rail Maintenance Facility, Tilt-Up
55	RMF6H	Rail Maintenance Facility, Concrete Frame & URM
56	RMF7H	Rail Maintenance Facility, Wood

Table A.8 Light Rail System Classification

No.	Label[2]	Description
		Light Rail Tracks
1	LTR1	Light Rail Track
		Light Rail Bridges
2	LBR1	Light Rail Bridge - Seismically Designed/Retrofitted
3	LBR2	Light Rail Bridge - Conventionally Designed
		Light Rail Tunnels
4	LTU1	Light Rail Bored/Drilled Tunnel
5	LTU2	Light Rail Cut and Cover Tunnel
		DC Substation
6	LDC1	Light Rail DC Substation w/ Anchored Sub-Components
7	LDC2	Light Rail DC Substation w/ Unanchored Sub-Components
		Dispatch Facility
8	LDF1	Light Rail Dispatch Facility w/ Anchored Sub-Comp., w/ Back-Up (BU) Power
9	LDF2	Light Rail Dispatch Facility w/ Anchored Sub-Comp., w/o BU Power
10	LDF3	Light Rail Dispatch Facility w/ Unanchored Sub-Comp., w/ BU Power
11	LDF4	Light Rail Dispatch Facility w/ Unanchored Sub-Comp., w/o BU Power
		Maintenance Facility
12	LMF1L	Maintenance Facility, RC Shear Walls (C2L)
13	LMF2L	Maintenance Facility, Braced Steel Frame (S2L)
14	LMF3L	Maintenance Facility, MR Steel Frame (S1L)
15	LMF4L	Maintenance Facility, Steel Frame & URM (S5L)
16	LMF5L	Maintenance Facility, Tilt-Up (PC1)
17	LMF6L	Maintenance Facility, C3L (Concrete Frame & URM)
18	LMF7L	Maintenance Facility, W1 (Wood)
19	LMF1M	Maintenance Facility, RC Shear Walls (C2L)
20	LMF2M	Maintenance Facility, Braced Steel Frame (S2L)
21	LMF3M	Maintenance Facility, MR Steel Frame (S1L)

[2] H = high, M = moderate, L = low seismic design level

Table A.8 Cont. Light Rail System Classification

No.	Label	Description
22	LMF4M	Maintenance Facility, Steel Frame & URM (S5L)
23	LMF5M	Maintenance Facility, Tilt-Up (PC1)
24	LMF6M	Maintenance Facility, C3L (Concrete Frame & URM)
25	LMF7M	Maintenance Facility, W1 (Wood)
26	LMF1H	Maintenance Facility, RC Shear Walls (C2L)
27	LMF2H	Maintenance Facility, Braced Steel Frame (S2L)
28	LMF3H	Maintenance Facility, MR Steel Frame (S1L)
29	LMF4H	Maintenance Facility, Steel Frame & URM (S5L)
30	LMF5H	Maintenance Facility, Tilt-Up (PC1)
31	LMF6H	Maintenance Facility, C3L (Concrete Frame & URM)
32	LMF7H	Maintenance Facility, W1 (Wood)

Table A.9 Bus System Classification

No.	Label[3]	Description
		Bus Urban Station
1	BPT1L	Bus Urban Station, RC Shear Walls (C2L)
2	BPT2L	Bus Urban Station, Braced Steel Frame (S2L)
3	BPT3L	Bus Urban Station, MR Steel Frame (S1L)
4	BPT4L	Bus Urban Station, Steel Frame & URM (S5L)
5	BPT5L	Bus Urban Station, Tilt-Up (PC1)
6	BPT6L	Bus Urban Station, C3L (Concrete Frame & URM)
7	BPT7L	Bus Urban Station, W1 (Wood)
8	BPT1M	Bus Urban Station, RC Shear Walls (C2L)
9	BPT2M	Bus Urban Station, Braced Steel Frame (S2L)
10	BPT3M	Bus Urban Station, MR Steel Frame (S1L)
11	BPT4M	Bus Urban Station, Steel Frame & URM (S5L)
12	BPT5M	Bus Urban Station, Tilt-Up (PC1)
13	BPT6M	Bus Urban Station, C3L (Concrete Frame & URM)
14	BPT7M	Bus Urban Station, W1 (Wood)
15	BPT1H	Bus Urban Station, RC Shear Walls (C2L)
16	BPT2H	Bus Urban Station, Braced Steel Frame (S2L)
17	BPT3H	Bus Urban Station, MR Steel Frame (S1L)
18	BPT4H	Bus Urban Station, Steel Frame & URM (S5L)
19	BPT5H	Bus Urban Station, Tilt-Up (PC1)
20	BPT6H	Bus Urban Station, C3L (Concrete Frame & URM)
21	BPT7H	Bus Urban Station, W1 (Wood)
		Bus Fuel Facility
22	BFF1	Bus Fuel Facility w/ Anchored Tanks, w/ Back-Up (BU) Power
23	BFF2	Bus Fuel Facility w/ Anchored Tanks, w/o BU Power
24	BFF3	Bus Fuel Facility w/ Unanchored Tanks, w/ BU Power
25	BFF4	Bus Fuel Facility w/ Unanchored Tanks, w/o BU Power
26	BFF5	Bus Fuel Facility w/ Buried Tanks

[3] Note: H = high, M = moderate, L = low seismic design level.

Table A.9 Cont. Bus System Classification

No.	Name	Description
		Bus Dispatch Facility
27	BDF1	Bus Dispatch Facility w/ Anchored Sub-Comp., w/ BU Power
28	BDF2	Bus Dispatch Facility w/ Anchored Sub-Comp., w/o BU Power
29	BDF3	Bus Dispatch Facility w/ Unanchored Sub-Comp., w/ BU Power
30	BDF4	Bus Dispatch Facility w/ Unanchored Sub-Comp., w/o BU Power
		Bus Maintenance Facility
31	BMF1L	Bus Maintenance Facilities, RC Shear Walls (C2L)
32	BMF2L	Bus Maintenance Facilities, Braced Steel Frame (S2L)
33	BMF3L	Bus Maintenance Facilities, MR Steel Frame (S1L)
34	BMF4L	Bus Maintenance Facilities, Steel Frame & URM (S5L)
35	BMF5L	Bus Maintenance Facilities, Tilt-Up (PC1)
36	BMF6L	Bus Maintenance Facilities, C3L (Concrete Frame & URM)
37	BMF7L	Bus Maintenance Facilities, W1 (Wood)
38	BMF1M	Bus Maintenance Facilities, RC Shear Walls (C2L)
39	BMF2M	Bus Maintenance Facilities, Braced Steel Frame (S2L)
40	BMF3M	Bus Maintenance Facilities, MR Steel Frame (S1L)
41	BMF4M	Bus Maintenance Facilities, Steel Frame & URM (S5L)
42	BMF5M	Bus Maintenance Facilities, Tilt-Up (PC1)
43	BMF6M	Bus Maintenance Facilities, C3L (Concrete Frame & URM)
44	BMF7M	Bus Maintenance Facilities, W1 (Wood)
45	BMF1H	Bus Maintenance Facilities, RC Shear Walls (C2L)
46	BMF2H	Bus Maintenance Facilities, Braced Steel Frame (S2L)
47	BMF3H	Bus Maintenance Facilities, MR Steel Frame (S1L)
48	BMF4H	Bus Maintenance Facilities, Steel Frame & URM (S5L)
49	BMF5H	Bus Maintenance Facilities, Tilt-Up (PC1)
50	BMF6H	Bus Maintenance Facilities, C3L (Concrete Frame & URM)
51	BMF7H	Bus Maintenance Facilities, W1 (Wood)

Note: H = high, M = moderate, L = low seismic design level

Table A.10 Port and Harbor System Classification

No.	Label	Description
		Waterfront Structures
1	PWS1	Waterfront Structures
		Cranes/Cargo Handling Equipment
2	PEQ1	Stationary Port Handling Equipment
3	PEQ2	Rail Mounted Port Handling Equipment
		Warehouses
4	PWH1L	Port Warehouses, RC Shear Walls (C2L)
5	PWH2L	Port Warehouses, Braced Steel Frame (S2L)
6	PWH3L	Port Warehouses, MR Steel Frame (S1L)
7	PWH4L	Port Warehouses, Steel Frame & URM (S5L)
8	PWH5L	Port Warehouses, Tilt-Up (PC1)
9	PWH6L	Port Warehouses, C3L (Concrete Frame & URM)
10	PWH7L	Port Warehouses, W1 (Wood)
11	PWH1M	Port Warehouses, RC Shear Walls (C2L)
12	PWH2M	Port Warehouses, Braced Steel Frame (S2L)
13	PWH3M	Port Warehouses, MR Steel Frame (S1L)
14	PWH4M	Port Warehouses, Steel Frame & URM (S5L)
15	PWH5M	Port Warehouses, Tilt-Up (PC1)
16	PWH6M	Port Warehouses, C3L (Concrete Frame & URM)
17	PWH7M	Port Warehouses, W1 (Wood)
18	PWH1H	Port Warehouses, RC Shear Walls (C2L)
19	PWH2H	Port Warehouses, Braced Steel Frame (S2L)
20	PWH3H	Port Warehouses, MR Steel Frame (S1L)
21	PWH4H	Port Warehouses, Steel Frame & URM (S5L)
22	PWH5H	Port Warehouses, Tilt-Up (PC1)
23	PWH6H	Port Warehouses, C3L (Concrete Frame & URM)
24	PWH7H	Port Warehouses, W1 (Wood)
		Fuel Facility
25	PFF1	Port Fuel Facility w/ Anchored Tanks, w/ Back-Up (BU) Power
26	PFF2	Port Fuel Facility w/ Anchored Tanks, w/o BU Power
27	PFF3	Port Fuel Facility w/ Unanchored Tanks, w/ BU Power
28	PFF4	Port Fuel Facility w/ Unanchored Tanks, w/o BU Power
29	PFF5	Port Fuel Facility w/ Buried Tanks

Note: H = high, M = moderate, L = low seismic design level.

Table A.11 Ferry System Classification

No.	Label	Description
		Water Front Structures
1	FWS1	Ferry Waterfront Structures
		Ferry Passenger Terminals
2	FPT1L	Passenger Terminals, RC Shear Walls (C2L)
3	FPT2L	Passenger Terminals, Braced Steel Frame (S2L)
4	FPT3L	Passenger Terminals, MR Steel Frame (S1L)
5	FPT4L	Passenger Terminals, Steel Frame & URM (S5L)
6	FPT5L	Passenger Terminals, Tilt-Up (PC1)
7	FPT6L	Passenger Terminals, C3L (Concrete Frame & URM)
8	FPT7L	Passenger Terminals, W1 (Wood)
9	FPT1M	Passenger Terminals, RC Shear Walls (C2L)
10	FPT2M	Passenger Terminals, Braced Steel Frame (S2L)
11	FPT3M	Passenger Terminals, MR Steel Frame (S1L)
12	FPT4M	Passenger Terminals, Steel Frame & URM (S5L)
13	FPT5M	Passenger Terminals, Tilt-Up (PC1)
14	FPT6M	Passenger Terminals, C3L (Concrete Frame & URM)
15	FPT7M	Passenger Terminals, W1 (Wood)
16	FPT1H	Passenger Terminals, RC Shear Walls (C2L)
17	FPT2H	Passenger Terminals, Braced Steel Frame (S2L)
18	FPT3H	Passenger Terminals, MR Steel Frame (S1L)
19	FPT4H	Passenger Terminals, Steel Frame & URM (S5L)
20	FPT5H	Passenger Terminals, Tilt-Up (PC1)
21	FPT6H	Passenger Terminals, C3L (Concrete Frame & URM)
22	FPT7H	Passenger Terminals, W1 (Wood)
		Ferry Fuel Facility
23	FFF1	Ferry Fuel Facility w/ Anchored Tanks, w/ Back-Up (BU) Power
24	FFF2	Ferry Fuel Facility w/ Anchored Tanks, w/o BU Power
25	FFF3	Ferry Fuel Facility w/ Unanchored Tanks, w/ BU Power
26	FFF4	Ferry Fuel Facility w/ Unanchored Tanks, w/o BU Power
27	FFF5	Ferry Fuel Facility w/ Buried Tanks

Note: H = high, M = moderate, L = low seismic design level.

Table A.11 Cont. Ferry System Classification

No.	Label	Description
		Ferry Dispatch Facility
28	FDF1	Ferry Dispatch Facility w/ Anchored Sub-Comp., w/ BU Power
29	FDF2	Ferry Dispatch Facility w/ Anchored Sub-Comp., w/o BU Power
30	FDF3	Ferry Dispatch Facility w/ Unanchored Sub-Comp., w/ BU Power
31	FDF4	Ferry Dispatch Facility w/ Unanchored Sub-Comp., w/o BU Power
		Ferry Maintenance Facility
32	FMF1L	Piers and Dock Facilities, RC Shear Walls (C2L)
33	FMF2L	Piers and Dock Facilities, Braced Steel Frame (S2L)
34	FMF3L	Piers and Dock Facilities, MR Steel Frame (S1L)
35	FMF4L	Piers and Dock Facilities, Steel Frame & URM (S5L)
36	FMF5L	Piers and Dock Facilities, Tilt-Up (PC1)
37	FMF6L	Piers and Dock Facilities, C3L (Concrete Frame & URM)
38	FMF7L	Piers and Dock Facilities, W1 (Wood)
39	FMF1M	Piers and Dock Facilities, RC Shear Walls (C2L)
40	FMF2M	Piers and Dock Facilities, Braced Steel Frame (S2L)
41	FMF3M	Piers and Dock Facilities, MR Steel Frame (S1L)
42	FMF4M	Piers and Dock Facilities, Steel Frame & URM (S5L)
43	FMF5M	Piers and Dock Facilities, Tilt-Up (PC1)
44	FMF6M	Piers and Dock Facilities, C3L (Concrete Frame & URM)
45	FMF7M	Piers and Dock Facilities, W1 (Wood)
46	FMF1H	Piers and Dock Facilities, RC Shear Walls (C2L)
47	FMF2H	Piers and Dock Facilities, Braced Steel Frame (S2L)
48	FMF3H	Piers and Dock Facilities, MR Steel Frame (S1L)
49	FMF4H	Piers and Dock Facilities, Steel Frame & URM (S5L)
50	FMF5H	Piers and Dock Facilities, Tilt-Up (PC1)
51	FMF6H	Piers and Dock Facilities, C3L (Concrete Frame & URM)
52	FMF7H	Piers and Dock Facilities, W1 (Wood)

Note: H = high, M = moderate, L = low seismic design level.

Table A.12 Airport System Classification

No.	Label	Description
		Airport Control Towers
1	ACT1L	Airport Control Tower, RC Shear Walls (C2L)
2	ACT2L	Airport Control Tower, Braced Steel Frame (S2L)
3	ACT3L	Airport Control Tower, MR Steel Frame (S1L)
4	ACT4L	Airport Control Tower, Steel Frame & URM (S5L)
5	ACT5L	Airport Control Tower, Tilt-Up (PC1)
6	ACT6L	Airport Control Tower, C3L (Concrete Frame & URM)
7	ACT7L	Airport Control Tower, W1 (Wood)
8	ACT1M	Airport Control Tower, RC Shear Walls (C2L)
9	ACT2M	Airport Control Tower, Braced Steel Frame (S2L)
10	ACT3M	Airport Control Tower, MR Steel Frame (S1L)
11	ACT4M	Airport Control Tower, Steel Frame & URM (S5L)
12	ACT5M	Airport Control Tower, Tilt-Up (PC1)
13	ACT6M	Airport Control Tower, C3L (Concrete Frame & URM)
14	ACT7M	Airport Control Tower, W1 (Wood)
15	ACT1H	Airport Control Tower, RC Shear Walls (C2L)
16	ACT2H	Airport Control Tower, Braced Steel Frame (S2L)
17	ACT3H	Airport Control Tower, MR Steel Frame (S1L)
18	ACT4H	Airport Control Tower, Steel Frame & URM (S5L)
19	ACT5H	Airport Control Tower, Tilt-Up (PC1)
20	ACT6H	Airport Control Tower, C3L (Concrete Frame & URM)
21	ACT7H	Airport Control Tower, W1 (Wood)
		Airport Runways
22	ARW1	Airport Runway
		Airport Terminal Buildings
23	ATB1L	Airport Terminal Building, RC Shear Walls (C2L)
24	ATB2L	Airport Terminal Building, Braced Steel Frame (S2L)
25	ATB3L	Airport Terminal Building, MR Steel Frame (S1L)
26	ATB4L	Airport Terminal Building, Steel Frame & URM (S5L)
27	ATB5L	Airport Terminal Building, Tilt-Up (PC1)

Note: H = high, M = moderate, L = low seismic design level.

Table A.12 Cont. Airort System Classification

No.	Label	Description
28	ATB6L	Airport Terminal Building, W1 (Wood)
29	ATB1M	Airport Terminal Building, RC Shear Walls (C2L)
30	ATB2M	Airport Terminal Building, Braced Steel Frame (S2L)
31	ATB3M	Airport Terminal Building, MR Steel Frame (S1L)
32	ATB4M	Airport Terminal Building, Steel Frame & URM (S5L)
33	ATB5M	Airport Terminal Building, Tilt-Up (PC1)
34	ATB6M	Airport Terminal Building, W1 (Wood)
35	ATB1H	Airport Terminal Building, RC Shear Walls (C2L)
36	ATB2H	Airport Terminal Building, Braced Steel Frame (S2L)
37	ATB3H	Airport Terminal Building, MR Steel Frame (S1L)
38	ATB4H	Airport Terminal Building, Steel Frame & URM (S5L)
39	ATB5H	Airport Terminal Building, Tilt-Up (PC1)
40	ATB6H	Airport Terminal Building, W1 (Wood)
41	ATBU1	Airport Terminal Building w/Unknown Structure Type
		Airport Parking Structures
42	APS1L	Airport Parking Structure, RC Shear Walls (C2L)
43	APS2L	Airport Parking Structure, Braced Steel Frame (S2L)
44	APS3L	Airport Parking Structure, MR Steel Frame (S1L)
45	APS4L	Airport Parking Structure, Steel Frame & URM (S5L)
46	APS5L	Airport Parking Structure, Tilt-Up (PC1)
47	APS6L	Airport Parking Structure, W1 (Wood)
48	APS1M	Airport Parking Structure, RC Shear Walls (C2L)
49	APS2M	Airport Parking Structure, Braced Steel Frame (S2L)
50	APS3M	Airport Parking Structure, MR Steel Frame (S1L)
51	APS4M	Airport Parking Structure, Steel Frame & URM (S5L)
52	APS5M	Airport Parking Structure, Tilt-Up (PC1)
53	APS6M	Airport Parking Structure, W1 (Wood)
54	APS1H	Airport Parking Structure, RC Shear Walls (C2L)
55	APS2H	Airport Parking Structure, Braced Steel Frame (S2L)
56	APS3H	Airport Parking Structure, MR Steel Frame (S1L)
57	APS4H	Airport Parking Structure, Steel Frame & URM (S5L)
58	APS5H	Airport Parking Structure, Tilt-Up (PC1)
59	APS6H	Airport Parking Structure, W1 (Wood)

Note: H = high, M = moderate, L = low seismic design level.

Table A.12 Cont. Airport ystem Classification

No.	Label	Description
		Fuel Facilities
60	AFF1	Airport Fuel Facility w/ Anchored Tanks, w/ Back-Up (BU) Power
61	AFF2	Airport Fuel Facility w/ Anchored Tanks, w/o BU Power
62	AFF3	Airport Fuel Facility w/ Unanchored Tanks, w/ BU Power
63	AFF4	Airport Fuel Facility w/ Unanchored Tanks, w/o BU Power
64	AFF5	Airport Fuel Facility w/ Buried Tanks
		Airport Maintenance & Hangar Facility
65	AMF1L	Airport Maintenance & Hangar Facility, RC Shear Walls (C2L)
66	AMF2L	Airport Maintenance & Hangar Facility, Braced Steel Frame (S2L)
67	AMF3L	Airport Maintenance & Hangar Facility, MR Steel Frame (S1L)
68	AMF4L	Airport Maintenance & Hangar Facility, Steel Frame & URM (S5L)
69	AMF5L	Airport Maintenance & Hangar Facility, Tilt-Up (PC1)
70	AMF6L	Airport Maintenance & Hangar Facility, C3L (Concrete Frame & URM)
71	AMF7L	Airport Maintenance & Hangar Facility, W1 (Wood)
72	AMF1M	Airport Maintenance & Hangar Facility, RC Shear Walls (C2L)
73	AMF2M	Airport Maintenance & Hangar Facility, Braced Steel Frame (S2L)
74	AMF3M	Airport Maintenance & Hangar Facility, MR Steel Frame (S1L)
75	AMF4M	Airport Maintenance & Hangar Facility, Steel Frame & URM (S5L)
76	AMF5M	Airport Maintenance & Hangar Facility, Tilt-Up (PC1)
77	AMF6M	Airport Maintenance & Hangar Facility, C3L (Concrete Frame & URM)
78	AMF7M	Airport Maintenance & Hangar Facility, W1 (Wood)
79	AMF1H	Airport Maintenance & Hangar Facility, RC Shear Walls (C2L)
80	AMF2H	Airport Maintenance & Hangar Facility, Braced Steel Frame (S2L)
81	AMF3H	Airport Maintenance & Hangar Facility, MR Steel Frame (S1L)
82	AMF4H	Airport Maintenance & Hangar Facility, Steel Frame & URM (S5L)
83	AMF5H	Airport Maintenance & Hangar Facility, Tilt-Up (PC1)
84	AMF6H	Airport Maintenance & Hangar Facility, C3L (Concrete Frame & URM)
85	AMF7H	Airport Maintenance & Hangar Facility, W1 (Wood)
		Airport Facilities - Others
86	AFO1	Gliderport, Seaport, Stolport, Ultralight or Baloonport Facilities
87	AFH1	Heliport Facilities

Note: H = high, M = moderate, L = low seismic design level.

Table A.13 Potable Water System Classification

No.	Label	Description
		Pipelines
1	PWP1	Brittle Pipe
2	PWP2	Ductile Pipe
		Water Treatment Plants
3	PWT1	Small WTP with Anchored Components < 50 MGD
4	PWT2	Small WTP with Unanchored Components < 50 MGD
5	PWT3	Medium WTP with Anchored Components 50-200 MGD
6	PWT4	Medium WTP with Unanchored Components 50-200 MGD
7	PWT5	Large WTP with Anchored Components > 200 MGD
8	PWT6	Large WTP with Unanchored Components > 200 MGD
		Wells
9	PWE1	Wells
		Water Storage Tanks (Typically, 0.5 MGD to 2 MGD)
10	PST1	On Ground Anchored Concrete Tank
11	PST2	On Ground Unanchored Concrete Tank
12	PST3	On Ground Anchored Steel Tank
13	PST4	On Ground Unanchored Steel Tank
14	PST5	Above Ground Steel Tank
15	PST6	On Ground Wood Tank
16	PST7	Buried Concrete Tank
		Pumping Plants
17	PPP1	Small Pumping Plant with Anchored Equipment < 10 MGD
18	PPP2	Small Pumping Plant with Unanchored Equipment < 10 MGD
19	PPP3	Medium/Large Pumping Plant with Anchored Equipment ≥ 10 MGD
20	PPP4	Medium/Large Pumping Plant with Unanchored Equipment ≥10 MGD

Table A.14 Waste Water System Classification

No.	Label	Description
		Buried Pipelines
1	WWP1	Brittle Pipe
2	WWP2	Ductile Pipe
		Waste Water Treatment Plants
3	WWT1	Small WWTP with Anchored Components < 50 MGD
4	WWT2	Small WWTP with Unanchored Components < 50 MGD
5	WWT3	Medium WWTP with Anchored Components 50-200 MGD
6	WWT4	Medium WWTP with Unanchored Components 50-200 MGD
7	WWT5	Large WWTP with Anchored Components > 200 MGD
8	WWT6	Large WWTP with Unanchored Components > 200 MGD
		Lift Stations
9	WLS1	Small Lift Stations with Anchored Components < 10 MGD
10	WLS2	Small Lift Stations with Unanchored Components < 10 MGD
11	WLS3	Medium/Large Lift Stations with Anchored Components ≥ 10 MGD
12	WLS4	Medium/Large Lift Stations with Unanchored Components ≥ 10 MGD

Table A.5 Oil System Classification

No.	Label	Description
		Pipelines
1	OIP1	Welded Steel Pipe with Gas Welded Joints
2	OIP2	Welded Steel Pipe with Arc Welded Joints
		Refineries
3	ORF1	Small Refinery with Anchored Equipment < 100,000 bl/day
4	ORF2	Small Refinery with Unanchored Equipment < 100,000 bl/day
5	ORF3	Medium/Large Refinery with Anchored Equipment ≥ 100,000 bl/day
6	ORF4	Medium/Large Refinery with Unanchored Equipment ≥100,000 bl/day
		Pumping Plants
7	OPP1	Pumping Plant with Anchored Equipment
8	OPP2	Pumping Plant with Unanchored Equipment
		Tank Farms
9	OTF1	Tank Farms with Anchored Tanks
10	OTF2	Tank Farms with Unanchored Tanks

Table A.16 Natural Gas System Classification

No.,	Name	Description
		Buried Pipelines
1	NGP1	Welded Steel Pipe with Gas Welded Joints
2	NGP2	Welded Steel Pipe with Arc Welded Joints
		Compressor Stations
3	NGC1	Compressor Stations with Anchored Components
4	NGC2	Compressor Stations with Unanchored Components

Table A.17 Electric Power System Classification

No.	Name	Description
		Transmission Substations
1	ESS1	Low Voltage (115 KV) Substation with Anchored Components
2	ESS2	Low Voltage (115 KV) Substation with Unanchored Components
3	ESS3	Medium Voltage (230 KV) Substation with Anchored Components
4	ESS4	Medium Voltage (230 KV) Substation with Unanchored Components
5	ESS5	High Voltage (500 KV) Substation with Anchored Components
6	ESS6	High Voltage (500 KV) Substation with Unanchored Components
		Distribution Circuits
7	EDC1	Distribution Circuits with Seismically Designed Components
8	EDC2	Distribution Circuits with Standard Components
		Generation Plants
9	EPP1	Small Power Plants with Anchored Components < 100 MW
10	EPP2	Small Power Plants with Unanchored Components < 100 MW
11	EPP3	Medium/Large Power Plants with Anchored Components ≥ 100 MW
12	EPP4	Medium/Large Power Plants with Unanchored Components ≥100 MW

Table A.18 Communication Classification

No.	Name	Description
		Central Offices
1	CCO1	Central Offices with Anchored Components , w/ Back-Up (BU) Power
2	CCO2	Central Offices with Anchored Components , w/o BU Power
3	CCO3	Central Offices with Unanchored Components , w/ BU Power
4	CCO4	Central Offices with Unanchored Components , w/o BU Power
		Stations or Transmitters
5	CBR1	AM or FM radio stations or transmitters
6	CBT1	TV stations or transmitters
7	CBW1	Weather stations or transmitters
8	CBO1	Other stations or transmitters

Table A.19 Mapping of Standard Industrial Codes to NIBS Occupancy Classes

Label	Occupancy Class	Standard Industrial Codes (SIC)
	Residential	
RES1	Single Family Dwelling	
RES2	Mobile Home	
RES3	Multi Family Dwelling	
RES4	Temporary Lodging	70
RES5	Institutional Dormitory	
RES6	Nursing Home	8051, 8052, 8059
	Commercial	
COM1	Retail Trade	52, 53, 54, 55, 56, 57, 59
COM2	Wholesale Trade	42, 50, 51
COM3	Personal and Repair Services	72, 75, 76, 83, 88
COM4	Business/Professional/Technical Services	40, 41, 44, 45, 46, 47, 49, 61, 62, 63, 64, 65, 67, 73, 78 (except 7832), 81, 87, 89
COM5	Depository Institutions	60
COM6	Hospital	8062, 8063, 8069
COM7	Medical Office/Clinic	80 (except 8051, 8052, 8059, 8062, 8063, 8069)
COM8	Entertainment & Recreation	48, 58, 79 (except 7911), 84
COM9	Theaters	7832, 7911
COM10	Parking	
	Industrial	
IND1	Heavy	22, 24, 26, 32, 34, 35 (except 3571, 3572), 37
IND2	Light	23, 25, 27, 30, 31, 36 (except 3671, 3672, 3674), 38, 39
IND3	Food/Drugs/Chemicals	20, 21, 28, 29
IND4	Metals/Minerals Processing	10, 12, 13, 14, 33
IND5	High Technology	3571, 3572, 3671, 3672, 3674
IND6	Construction	15, 16, 17
	Agriculture	
AGR1	Agriculture	01, 02, 07, 08, 09
	Religion/Non-Profit	
REL1	Church/Membership Organizations	86
	Government	
GOV1	General Services	43, 91, 92 (except 9221, 9224) , 93, 94, 95, 96, 97
GOV2	Emergency Response	9221, 9224
	Education	
EDU1	Schools/Libraries	82 (except 8221, 8222)
EDU2	Colleges/Universities	8221, 8222